

# NASA TECH BRIEF

## *Goddard Space Flight Center*



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### High-Voltage Distributors

#### The problem:

High-voltage power is fed to a number of circuits by specially-constructed high-voltage distributors. Ordinary bus wires are not used because they are difficult to service and are subject to high-voltage breakdowns and corona discharges, which interfere with circuit operation and sometimes damage the equipment. In addition, when vacuum pumping is used as in space-flight equipment, conventional high-voltage distributors can retain some of the air in which coronas can occur.

#### The solution:

Two high-voltage distributors have been developed to reduce high-voltage breakdowns and corona discharges. Both distributors are constructed to prevent air traps and facilitate servicing without soldering.

The occurrence of coronas is also minimized due to smooth surfaces of the device.

#### How it's done:

Figure 1 shows a distributor which includes a number of conductive washers. Each washer has a blind hole drilled in it for the insertion and soldering of a lead connected to either the power source or one of the circuits. The washers are held firmly against each other by a retaining rod. In addition, every washer has a venthole drilled through to reach the retaining rod and allow air to be removed from the retaining rod area during evacuation. The device is supported by two insulating standoffs made from tetrafluorocarbon. Each standoff includes a clearance hole for mounting the distributor.

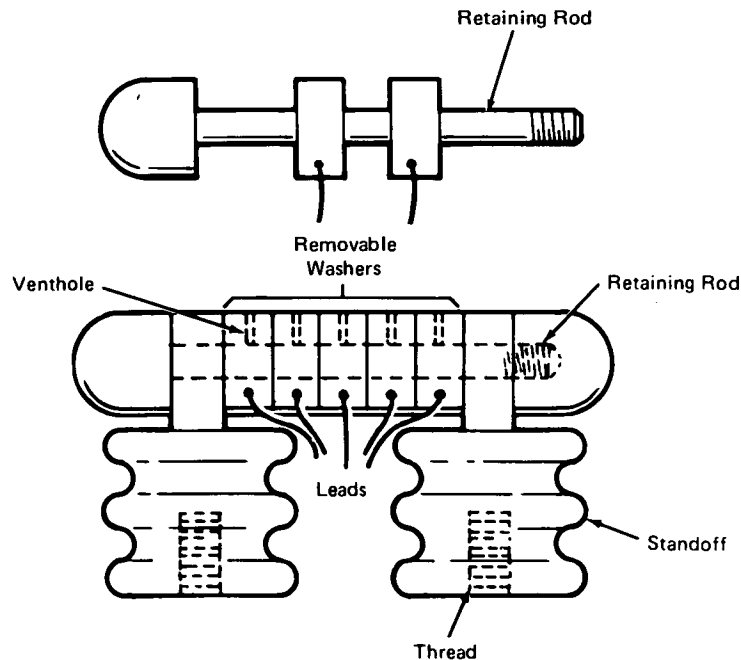


Figure 1. High-Voltage Distributor

(continued overleaf)

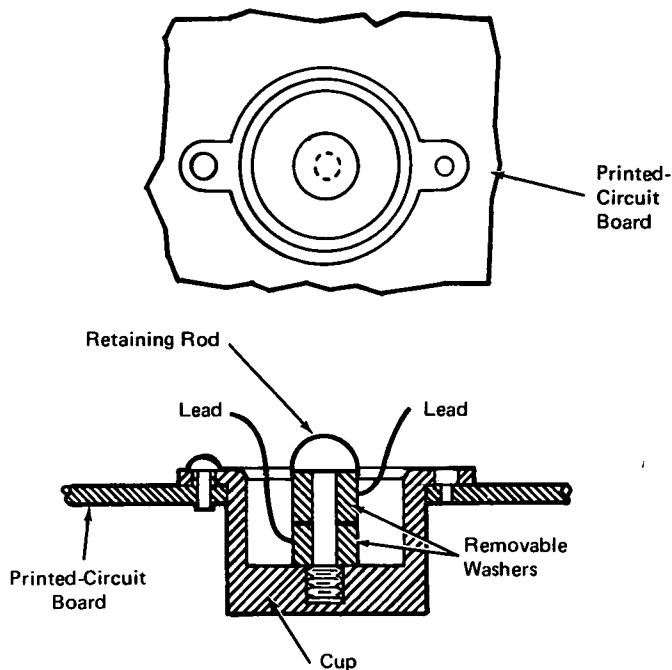


Figure 2. High-Voltage Distributor for Printed Circuits

The second distributor, which is designed to be used with printed circuits, is shown in Figure 2. It also includes a retaining rod and washers as described previously. In this case, the retaining rod is screwed into an insulating cup. The cup is inserted into the printed-circuit board and is fastened with screws or adhesives. The base of the cup is threaded to accept the retaining rod. The washers permit many removals and replacements of supplies (for troubleshooting, etc.) with no threat to integrity of the wiring.

**Patent status:**

This invention is owned by NASA, and a patent application has been filed. Inquiries concerning non-exclusive or exclusive license for its commercial development should be addressed to:

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**Note:**

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